Remarks/Arguments

The present amendment is made in response to the Office Action dated October 1, 2004, and identified as Paper No. 20040923. Claims 1-7 are pending in the application.

In the Action, the Examiner rejected claims 1 and 2 under 35 U.S.C. § 103(a) as obvious over the article entitled "A New Angle on Detection: A Physiological Model for the Detection of Tones in Noise" by Carney et al. ("*Carney*") in view of U.S. Patent No. 6,031,862 to Fullerton et al. ("*Fullerton*"). Claims 3 and 4 were rejected under 35 U.S.C. § 103(a) as obvious over *Carney* and *Fullerton*, in further view of U.S. Patent No. 5,757,641 to Minto ("*Minto*"). Claims 5-7 were rejected under 35 U.S.C. § 103(a) as obvious over *Carney*, *Fullerton*, and *Minto*, in further view of U.S. Patent No. 4,363,138 to Franklin et al. ("*Franklin*").

With regard to the various rejections in view of *Carney*, the articles reports on the research findings of the present inventor as to the physiological method by which tones may be detected by an ear, such as that found in a human or, in the case of the article, a gerbil. According to the Examiner, the only element of the claimed invention lacking in *Carney* is a running cross-correlator, which is suggested by *Fullerton* to "pull the signal out of the surrounding noise." When considered in context, *Fullerton* does not teach the use of a cross-correlator to detect a target frequency and the Examiner has therefore failed to state a prima case of obviousness under 35 U.S.C. § 103. *See* MPEP § 2142.

There is a serious question whether *Carney* actually discloses the claim filters. As explained above, *Carney* discloses that animal ears may recognize a given tone by detecting a temporal phase difference created in two 180 degree out-of-phase auditory nerve (AN) simulating filters having center frequencies around the tone to be detected. The filters disclosed

in the article are models of ***animal auditory nerves*** and thus do not comprise the claimed first and second filters having first and second center frequencies for detecting a target frequency.

Even if the auditory nerve filters are analogous to the claimed filters, *Fullerton* does not motivate the using a running cross-correlator with the claimed filters. Indeed, the motivation in *Fullerton* relied on by the Examiner is taken out of context and is otherwise insufficient to motivate the claimed invention. *See Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve*, 796 F.2d 443 (Fed. Cir. 1986) (failure to consider reference in its entirety was improper when considering obviousness). In particular, Fullterton does not actually use a cross-correlator to isolate a target frequency from noise.

Although *Fullerton* discloses the use of a cross-correlator, the device is employed in the receiver of a communication system to compare an encoded signal sent from a transmitter with a reference decoding signal corresponding to the psuedonoise (PN) code used by the transmitter. Col. 16, ll. 51-60. The results of the cross-correlation are then integrated over time to generate a baseband signal. Col. 17, ll. 39-44. The section of *Fullerton* relied on by the Examiner in fact points to another portion of the specification for an explanation of how the signal is in fact pulled "out of the noise." The referenced portion of the specification explains that the received signal is separated from noise by using a correlating, synchronous receiving function that uses a statistical sampling of many pulses to recover the transmitted information. Col. 10, ll. 27-31.

Fullerton is therefore using the term "noise" to refer to the pseudonoise (PN) signal used to encode the transmitted signal and is not referring to the isolation of a target frequency from conventional noise. Thus, when *Fullerton* is considered in context, it motivates the use of a ***cross-correlator and integration function*** to decode a broadband signal, but does not suggest using a cross-correlator to detect a narrowband frequency by comparing two filter responses.

Notably, the signal which *Fullerton* removes from the pseudonoise encoding signal is not a discrete frequency, but instead comprises a baseband signal which must be further demodulated to remove the sub-carrier signal and yield the information carrying signal. Col. 17, ll. 46-51. Thus, *Fullerton* discloses a system for sending and receiving an encoded signal that requires correlation with a reference signal and a multiple pulse, integration over time of the correlation results to recover the target signal from the noise (including the encoding signal), and then further processing to recover the target signal.

Even if the statement in Fullerton relied on by the Examiner was accurate, however, the Examiner has used improper hindsight analysis in leaping from the use of a cross-correlator to separate a signal from noise, to the use of a cross-correlator for comparing two filter responses. In order to supply the requisite motivation for an obviousness rejection, *Fullerton* must supply a motivation to use of a cross-correlator in a frequency detector ***for comparing two filter responses***, as the simple suggestion that a cross-correlator can remove noise is insufficient to motivate the claim combination. *See In re Kotzab*, 217 F.3d 1365, 1369-70 (Fed. Cir. 2000) (holding that there must be some motivation, suggestion or teaching of the ***desirability of making the specific combination claimed by the applicant***). *Fullerton* falls far short of meeting this standard for the requisite suggestion or motivation, and only suggests using a cross-correlator to separate a psuedonoise encoding signal from an information signal. If the claimed invention involved the use of a cross-correlator and integration function to remove the target signal from another signal, or even noise, the suggestion in *Fullterton* relied on by the Examiner might suffice.

The present invention, however, uses a cross-correlator to compare the results of two, 180 degree out-of-phase filters to detect whether the filter responses have been affected by the

presence of a target frequency. *Fullerton* lacks any motivation to combine a cross-correlator with two filters for any purpose, and does not suggest anything remotely related to the present invention. Indeed, Fullerton requires an integration function in combination with the cross-correlator to ***remove a psuedonoise code from a carrier signal***, while the present invention uses two filters and a cross-correlator to ***detect a target frequency***. As the claimed invention uses a cross-correlator in combination with two filter responses to detect a target frequency, the suggestion relied on in *Fullerton* is misplaced and does not in fact suggested the combination recited in the claims. To the extent the reference has any relationship to the claimed system, *Fullerton* actually teaches away from cross-correlating two filter responses as a method of isolating a target frequency because the prior art system employs filters ***after*** the cross-correlation is performed to demodulate the information signal.

In view of the foregoing, the Examiner's reconsideration and allowance of the claims of the present application is believed to be in order. If the Examiner believes a phone conference with Applicant's attorney would expedite prosecution of this application, please contact the undersigned at (315) 218-8515.

Respectfully submitted,

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